

5. (Amended) A process according to claim 1, wherein the draw-off flow rate is at most equal to twice the flow rate of the feedstock introduced into the distillation zone.

6. (Amended) A process according to claim 1, wherein the feedstock is introduced at a level that corresponds to substantially the center of the distillation column; the lateral draw-off level is located below said center of the column at a height that corresponds to fewer than five theoretical plates from said center; and the hydrogenation effluent is recycled above the center of the column at a level that corresponds to a height within the first five theoretical plates from the top of the column. ✓

7. (Amended) A process according to claim 1, conducting the process so that the ratio of the acetylene compounds/butadienes concentrations is the highest at the level of the lateral draw-off.

8. (Amended) A process according to claim 1, wherein the operating conditions of the distillation zone are as follows:

Number of theoretical plates: 35-45

Absolute pressure: 4-10 bar,

Top temperature: 30°C to 50°C

Bottom temperature: 90°C to 150°C

9. (Amended) A process according to claim 1, wherein the operating conditions in the hydrogenation zone are as follows:

Absolute pressure: 2 to 70 bar,

Temperature: 30 to 60°C,

Volumetric flow rate 3 to 10 h⁻¹,

Ratio of H₂/acetylene compounds (mol/mol) = 0.5 to 3,

Noble metal catalyst of group VIII,

0.01 to 1% by weight stabilized by at least one metal of the group formed by Au, Ag, Sn.

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10. (Amended) A process according to claim 1, further comprising adjusting the temperature of the hydrogenation effluent upstream from the recycling level in the rectification zone of the distillation column.

Please add the following new claims:

11. A process according to claim 1, wherein said portion of feedstock enriched with acetylenic compounds is drawn off laterally from the drainage zone.

12. A process according to claim 2, wherein the majority of hydrocarbons have 4 carbon atoms.

13. A process according to claim 3, wherein the butadiene content in the feedstock is at least 50% by weight.

14. A process according to claim 4, wherein the feedstock contains at most 2.5% by weight of acetylene compounds.

15. A process according to claim 5, wherein the flow rates are approximately equal.

16. A process according to claim 9, wherein the group VIII metal comprises palladium.